

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 03/32453

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 E04B2/86

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 E04B E02D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 106 233 A (BREAUX LOUIS B) 21 April 1992 (1992-04-21) abstract; figure 3	1,2,6
A	-----	8,10
A	US 5 216 863 A (PETTERSEN DAG ET AL) 8 June 1993 (1993-06-08) cited in the application abstract; figures 1-3	1-10
A	----- EP 0 244 851 A (STRABAG BAU AG) 11 November 1987 (1987-11-11) abstract; figures 3,4	1
A	----- US 5 974 751 A (DE ZEN VITTORIO) 2 November 1999 (1999-11-02) abstract	8-10

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

### \* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the International search

23 February 2004

Date of mailing of the International search report

27/02/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

De Neef, K

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No  
PCT/US 03/32453

Patent document cited in search report	Publication date		Patent family member(s)	Publication date
US 5106233	A 21-04-1992	AU CS WO US US US US US	6355490 A 9004115 A3 9102850 A1 5354149 A 5551807 A 5240348 A 5259705 A 5360293 A	03-04-1991 12-08-1992 07-03-1991 11-10-1994 03-09-1996 31-08-1993 09-11-1993 01-11-1994
US 5216863	A 08-06-1993	NO AT AT AU AU BR CA CN CZ DD DE DE DK EG EP ES GB GR HU HU IE JP JP LT MT MX NL WO NZ PT SE SE RU TR ZA	892844 A ,B, 404273 B 902889 A 634169 B2 4033089 A 8907759 A 1316366 C 1040410 A ,B 8904732 A3 284070 A5 3990874 C2 3990874 T0 24691 A 18782 A 0433298 A1 2014860 A6 2239275 A ,B 89100508 A ,B 209170 B 58388 A2 65244 B1 2899902 B2 4500103 T 978 A ,B 1044 A 163492 B 8920757 T 9001595 A1 232767 A 91376 A ,B 501559 C2 9100410 A 2032803 C1 25620 A 8905835 A	05-04-1990 27-10-1998 15-02-1998 18-02-1993 05-03-1990 27-08-1991 20-04-1993 14-03-1990 16-06-1993 31-10-1990 08-11-2001 18-07-1991 13-02-1991 28-02-1994 26-06-1991 16-07-1990 26-06-1991 22-08-1990 28-03-1994 28-02-1992 04-10-1995 02-06-1999 09-01-1992 27-03-1995 03-05-1991 21-05-1992 01-07-1991 22-02-1990 28-04-1993 08-03-1990 13-03-1995 12-02-1991 10-04-1995 03-05-1993 27-03-1991
EP 0244851	A 11-11-1987	DE AT DE DK EP GR JP NO	3615601 C1 54478 T 3763622 D1 231087 A ,B, 0244851 A1 3000760 T3 63022915 A 871890 A	06-08-1987 15-07-1990 16-08-1990 10-11-1987 11-11-1987 10-10-1991 30-01-1988 10-11-1987
US 5974751	A 02-11-1999	CA AT AU AU	2124492 A1 171751 T 691913 B2 2251395 A	28-11-1995 15-10-1998 28-05-1998 21-12-1995

## INTERNATIONAL SEARCH REPORT

## Information on patent family members

International application No

PCT/US 03/32453

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5974751	A	BG 62099 B1	26-02-1999
		BG 100984 A	30-12-1997
		BR 9507783 A	19-08-1997
		WO 9533106 A1	07-12-1995
		CN 1149328 A , B	07-05-1997
		CZ 9603476 A3	11-06-1997
		DE 69505115 D1	05-11-1998
		DE 69505115 T2	18-03-1999
		DK 760041 T3	21-06-1999
		EG 21007 A	30-09-2000
		EP 0760041 A1	05-03-1997
		ES 2123975 T3	16-01-1999
		FI 964674 A	22-11-1996
		HU 77698 A2	28-07-1998
		JP 10500746 T	20-01-1998
		MD 2041 B2	30-11-2002
		NO 965037 A	24-01-1997
		NZ 284021 A	23-12-1998
		PL 317351 A1	01-04-1997
		RO 114821 B	30-07-1999
		RU 2142541 C1	10-12-1999
		SK 151596 A3	09-07-1997
		ZA 9503933 A	17-01-1996